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EXAMINER

BYTHROW, PETER M

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,401	Applicant(s) SKULTETY-BETZ ET AL.	
	Examiner Peter M. Bythrow	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) 1-17 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18 and 20-39 is/are rejected.
- 7) ☒ Claim(s) 40 and 41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 18, 20-27, 38, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (US 6999021) in view of Miceli et al. (US 6246355).

As to Claim 18, Taylor discloses a device for locating underground utilities (abstract) comprising:

At least one radar sensor (column 3 line 22) that generates a first, high-frequency detection signal for penetrating a medium to be tested in such a way that information about an object enclosed in the medium can be obtained by measuring and analyzing a reflected detection signal of the at least one radar sensor (column 3 lines 20-24); and

At least one additional sensor (figure 1 elements 12 and 14) for generating at least one additional, second detection signal for obtaining information about the object enclosed in the medium (column 3 lines 1-3),

Wherein the information about the object enclosed in the medium includes position and depth information (column 3 lines 6-10).

Taylor does not specifically disclose at least one sensor being optimized on the basis of information obtained from the other sensors.

Miceli discloses a radar device for analyzing the structure of objects (abstract) comprising at least one radar sensor that generates a first signal for penetrating a medium to be tested in such a way that information about an object enclosed in the medium can be obtained by measuring and analyzing a reflected detection signal of the at least one radar sensor (column 1 lines 63-67), and a laser sensor (column 2 lines 8-9) for generating a second detection signal for obtaining information about the object enclosed in the medium, particularly the object's location (column 6 lines 29-36), wherein at least one sensor is optimized on the basis of information obtained from the other sensor (column 6 lines 49-56). Particularly, Miceli discloses optimizing the directivity of the radar sensor based on the target location information obtained by the laser system (column 6 lines 49-56).

In interpreting the claim language, examiner is reading an "object enclosed in the medium" under the broadest understanding possible. Because the type of medium claimed by the invention is not specified in the claim language, an "object enclosed in the medium" can be appropriately interpreted as an object surrounded by earth's atmosphere. In the case of Miceli, an object located in earth's atmosphere would constitute an "object enclosed in a medium".

As to Claim 20, Taylor discloses the additional sensor being an inductive sensor (column 3 lines 13-16).

As to Claims 21, and 22, capacitive sensors for detecting objects enclosed in a medium are well known in the art. It would have been obvious to modify Taylor in view of Miceli, such that the additional sensor was a capacitive sensor, as it would cause no new or unexpected results.

As to Claims 23 and 24, infrared sensors for detecting objects enclosed in a medium are well known in the art. It would have been obvious to modify Taylor in view of Miceli, such that the additional sensor was an infrared sensor, as it would cause no new or unexpected results.

As to Claim 25, Taylor discloses a housing in to which the radar sensor and the additional sensor are integrated (column 3 lines 1-3).

As to Claim 26, Taylor discloses the radar sensor and additional sensors being collocated on a moveable support (figure 1 element 16 and column 3 lines 1-3). The use of printed circuit boards is well known in the art. Though Taylor in view of Miceli does not explicitly disclose the sensors being mounted on a shared printed circuit board, it would have been obvious to modify Taylor in view of Miceli such that the radar sensor and additional sensors were mounted on a shared printed circuit board as it would cause no new or unexpected results.

As to Claim 27, Taylor discloses the radar sensor being advantageously implemented as a ground penetrating radar system (column 3 lines 20-24). Though Taylor in view of Miceli does not explicitly disclose the radar sensor being of the wideband pulse variety, wide band pulse radar sensors are well known in the art. It

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would have been obvious to modify Taylor in view of Miceli such that the radar sensor was a wide band pulse radar sensor as it would cause no new or unexpected results.

As to Claim 38, it is well known in the art to discard ambiguous signals and process unambiguous signals. It would have been obvious to modify Taylor in view of Miceli such that only unambiguous signals were sent downstream to a data processing unit in order to process only those signals which convey desired information and ignore aberrant signals.

As to Claim 39, signal analysis is well known in the art. It would have been obvious to modify Taylor in view of Miceli such that the unambiguous signals are sent downstream to the data processing unit after analysis by an analyzing unit as it would cause no new or unexpected results.

3. Claims 28-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wollny (US 5680048) in view of Taylor (US 6999021) and further in view of Miceli et al. (US 6246355).

As to Claim 28, Wollny discloses a radar device having a radar sensor that generates a first detection signal for penetrating a medium to be tested in such a way that information about an object enclosed in the medium can be obtained by measuring and analyzing a reflected detection signal of the radar sensor (column 1 lines 43-47), and an additional sensor for generating a second detection signal for obtaining information about the object enclosed in the medium (column 1 lines 65-67 and column 2 lines 1-3). Wollny does not specifically disclose the information about the object enclosed in the medium including position and depth information.

Taylor discloses a device for locating underground utilities (abstract) comprising:

At least one radar sensor (column 3 line 22) that generates a first, high-frequency detection signal for penetrating a medium to be tested in such a way that information about an object enclosed in the medium can be obtained by measuring and analyzing a reflected detection signal of the at least one radar sensor (column 3 lines 20-24); and

At least one additional sensor (figure 1 elements 12 and 14) for generating at least one additional, second detection signal for obtaining information about the object enclosed in the medium (column 3 lines 1-3),

Wherein the information about the object enclosed in the medium includes position and depth information (column 3 lines 6-10).

Wollny in view of Taylor does not specifically disclose at least one sensor being optimized on the basis of information obtained from the other sensors.

Miceli discloses a radar device for analyzing the structure of objects (abstract) comprising at least one radar sensor that generates a first signal for penetrating a medium to be tested in such a way that information about an object enclosed in the medium can be obtained by measuring and analyzing a reflected detection signal of the at least one radar sensor (column 1 lines 63-67), and a laser sensor (column 2 lines 8-9) for generating a second detection signal for obtaining information about the object enclosed in the medium, particularly the object's location (column 6 lines 29-36), wherein at least one sensor is optimized on the basis of information obtained from the other sensor (column 6 lines 49-56). Particularly, Miceli discloses optimizing the

directivity of the radar sensor based on the target location information obtained by the laser system (column 6 lines 49-56).

In interpreting the claim language, examiner is reading an "object enclosed in the medium" under the broadest understanding possible. Because the type of medium claimed by the invention is not specified in the claim language, an "object enclosed in the medium" can be appropriately interpreted as an object surrounded by earth's atmosphere. In the case of Miceli, an object located in earth's atmosphere would constitute an "object enclosed in a medium".

As to Claim 29, Wollny discloses receiving reflected radar signals for analysis (column 2 lines 49-57). It is inherent in the operation of this type of radar system that objects be detected by transmitting a radar signal and carrying out analysis on the reflected radar signal in order to measure an object.

As to Claims 30, and 31, capacitive sensors for detecting objects enclosed in a medium are well known in the art. It would have been obvious to modify Wollny in view of Taylor and Miceli, such that the additional sensor was a capacitive sensor, as it would cause no new or unexpected results.

Furthermore, Wollny discloses the radiating elements being situated on a printed circuit board, but does not explicitly disclose the radar sensors and the additional sensor being both situated on the printed circuit board. However, manufacture of sensor components on printed circuit boards is well known within the art. It would have been obvious to modify Wollny in view of Taylor and Miceli such that both the radar

sensor and the additional sensor were situated on the same printed circuit board as it would cause no new or unexpected results.

As to Claim 32, Wollny discloses the additional sensor being an inductive sensor and generating an additional detection signal (column 2 lines 22-25).

As to Claim 33-35, Wollny in view of Taylor and Miceli does not explicitly disclose the time operating parameters for measurement of the first detection signal and the second detection signal. However, time operating parameters for measurement of signals simultaneously, quasi-simultaneously, and sequentially are well known, and would be obvious to try, as they would cause no new or unexpected results

As to Claim 36, Wollny discloses measuring and analyzing a plurality of detection signals (column 1 lines 65-67 and column 2 line 1), the sensors originating from a group of sensors including an inductive sensor (column 2 lines 22-25).

As to Claim 37, Wollny discloses the detection signal of a sensor being optimized by measuring and analyzing an additional detection signal (column 3 lines 33-36).

Allowable Subject Matter

4. Claims 40 and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to disclose all of the features of the claims. Particularly, the

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prior art fails to disclose at least one sensor being optimized on the basis of information obtained from the other sensors wherein the optimization occurs by setting the at least one sensor to a program detected by the other sensor.

Response to Arguments

5. Applicant's arguments with respect to claims 18, 20-39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter M. Bythrow whose telephone number is (571)270-1468. The examiner can normally be reached on Mon-Fri, 8AM-5:30PM, Alt Fri, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Peter M. Bythrow
Examiner, Art Unit 3662

/Thomas H. Tarcza/
Supervisory Patent Examiner, Art Unit 3662